

Foreword

How Forecasts Are Made

Most of the annual streamflow in the Western United States originates as snowfall. This snowfall accumulates high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are viewed in conjunction with snowpack data to prepare runoff forecasts. This report presents a comprehensive picture of water supply outlook conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data and narratives describing current conditions.

Streamflow forecasts are cooperatively generated by Soil Conservation Service and National Weather Service hydrologists. Forecasts become more accurate as more data affecting runoff becomes known. For this reason, forecasts are issued that reflect three future precipitation conditions — Below Normal, Average, and Above Normal. These forecasts are termed reasonable minimum, most probable, and reasonable maximum. Actual streamflow can be expected to fall between the lower and upper forecast values eight out of ten years.

Snowpack data are obtained by using a combination of manual and automated measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation, temperature, and other parameters are monitored on a daily basis and transmitted via radio telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

For More Information

Copies of Monthly Water Supply Outlook Reports and other reports may be obtained from the states listed below. Because of the limited space, snow survey measurements are not published in monthly reports. An annual snow survey data summary is published by the Soil Conservation Service for each of the western states. Historical snow survey data may be obtained at those same offices.

STATE	ADDRESS
Alaska	201 East 9th Ave., Suite 300, Anchorage, AK 99501-3667
Arizona	201 East Indianola, Suite 200, Phoenix, AZ 85012
Colorado (New Mexico)	2490 West 28th Ave., Denver, CO 80211
Idaho	304 North 8th Street, Room 345, Boise, ID 83702
Montana	10 East Babcock, Room 443, Federal Building, Bozeman, MT 59715
Nevada	50 South Virginia Street, Third Floor, Reno, NV 89505
Oregon	1220 Southwest 3rd Ave., 16th Floor, Portland, OR 97204
Utah	4402 Federal Building, 125 South State Street, Salt Lake City, UT 84147
Washington	360 U.S. Court House, Spokane, WA 99201
Wyoming	Federal Building, 100 East "B" Street, Casper, WY 82602

In addition to state reports, a Water Supply Outlook for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 547, Portland, OR 97209.

Published by other agencies:

Water Supply Outlook Reports prepared by other agencies include: California — Snow Survey Branch, California Department of Water Resources, P.O. Box 368, Sacramento, CA 95802; British Columbia — The Ministry of Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia, V8V 1X5; Yukon Territory — Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory, Y1A 3V1; Alberta, Saskatchewan, and N.W.T. — The Water Survey of Canada, Inland Waters Branch, 110-12 Avenue S.N., Calgary, Alberta, T3C 1A6.

Oregon Water Supply Outlook

and

Federal – State – Private Cooperative Snow Surveys

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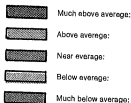
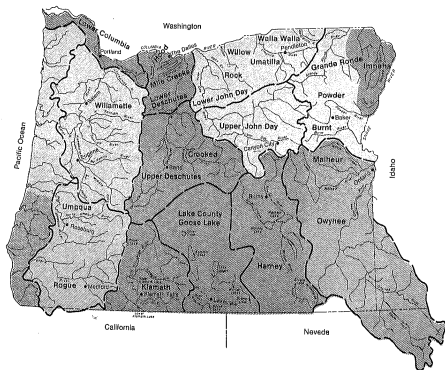
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STREAMFLOW SUMMARY FOR OREGON

Spring and Summer Period



0 5 10 20 40
SCALE IN MILES

WATER SUPPLY OUTLOOK AND SUMMARY FOR OREGON

October 1, 1986

SUMMARY:

SPRING AND SUMMER WATER SUPPLIES WERE NEAR NORMAL FOR MOST PEOPLE WITH ACCESS TO STORED WATER. FOR THOSE WITHOUT STORED WATER, THERE WERE MORE OCCURRENCES OF SHORT WATER SUPPLIES. BELOW AVERAGE AMOUNTS WERE REPORTED IN THE FOLLOWING COUNTIES: TILLAMOOK, LINCOLN, YAMHILL, NORTHERN HALF OF HARNEY, GILLIAM, MORROW, UMATILLA, UNION, AND BAKER. MUCH BELOW AVERAGE SUPPLIES WERE EXPERIENCED IN JOSEPHINE COUNTY. MOST CROP PRODUCTION WAS NEAR NORMAL THIS YEAR EXCEPT FOR BELOW NORMAL AMOUNTS IN JOSEPHINE, JEFFERSON AND MORROW COUNTIES.

PRECIPITATION:

Precipitation during the summer was above to much above normal for most of the state, ranging from 114% of normal in Harney County to 160% in the Rogue and Umpqua River basins. The exception to this is in northeastern Oregon and Malheur County where it was 82% to 96% of average. For the 1986 water year, the precipitation has been near normal across the state (91%-115% of average) except for 131% in Lake County.

RESERVOIR STORAGE:

Current reservoir storage is above the October 1 average and is similar to last year's amounts. Twenty-six principal irrigation reservoirs contain 1,729,500 acre feet of water which is 121% of average and 53% of capacity. Reservoir carry over is very good and most reservoirs should fill next season if it is a normal water year.

STREAMFLOW:

Flows on most major rivers were below average this past spring and summer (76% to 94% of average). The exceptions are the inflows to Upper Klamath Lake (108%) and Owyhee Reservoir (125%). September flows were very high across the state ranging from 112% on the Deschutes to 188% on the Umpqua.

Representative streamflows for this past runoff season, as a percent of average versus the April 1 forecasts, are as follows:

	Period	Observed Flow	April 1 Forecast
Owyhee net inflow	Apr-Sep	125%	98%
Grande Ronde near LaGrande	Apr-Sep	76%	89%
Middle Fork of Willamette near Oakridge	Apr-Sep	86%	94%
Rogue at Raygold	Apr-Sep	89%	85%
Upper Klamath Lake net inflow	Apr-Sep	108%	100%

-more-

Summary Continued-

Following is a summary of water supply conditions that were experienced this water year as reported by counties:

NORTHWEST OREGON COUNTIES

Columbia - Water supplies were adequate this year. Irrigation water was near average with no known shortages occurring.

Tillamook - Streamflow was below normal this year; but, there was adequate amounts of irrigation water available.

Yamhill - Irrigation water supplies were normal for Willamette River users but below normal for the Yamhill River system and small streams. Field crop yields were above average and they matured from 1 to 2 weeks earlier than normal. Fruits and berries matured 7 to 10 days early with higher than normal yields.

Multnomah - Normal amounts of irrigation water were available this year with no reports of insufficient water supplies.

Clackamas - Adequate irrigation water was available to most areas. Ground water supplies were below normal for those landowners with shallow wells.

Polk - While water availability was below average, so was the demand for water. The result was adequate amounts available for those requesting it. Polk County also experienced less irrigated crops being grown this year.

Benton - The Mary's River has recently been below minimum level; however, in other basins there has been no shortages of irrigation water. There has been less demand for irrigation water as fields are converted to grain, Christmas trees or pasture.

Lincoln - Both the Siletz and Alsea Rivers have been below minimum levels which is unusual for these coastal streams. This condition has resulted in reduced water supply for pasture irrigation along the Siletz. The remaining streams have low demand for water supplies but are approaching minimum streamflow levels.

Linn - Streamflow has been below normal this year; however, irrigation water supplies have been adequate. This has been due in part, to less land being irrigated because of the high cost of power.

Lane - There were no shortages of irrigation water this year. Some wells experienced lower levels.

SOUTHWEST OREGON COUNTIES

Coos and Curry Counties - Streamflow was lower this year; but, there were no reported shortages of irrigation water.

Josephine - Only 20% of the irrigated land received adequate water this year. Forage supplies and range conditions were poor.

CENTRAL OREGON COUNTIES

Wasco and Hood River Counties - 1986 was generally a good year for irrigation. Approximately 38,000 acres were irrigated, with only 6% impacted by low streamflows late in the season. Forage supplies were excellent where sufficient water was available and fair to good where irrigation was limited. Range conditions were fair.

Sherman - Normal irrigation water was supplied to all 1400 acres of irrigated land in the county. Forage supplies have been average but grain on shallow soils was below average.

Jefferson - Water supplies were adequate for approximately 50,000 acres. Only 2000 acres experienced insufficient quantities due to a drier than normal, late spring and summer period. Rangeland production was below average.

Klamath - The streams in Klamath County ran less than normal but no serious water shortages were encountered. Reservoir storage was adequate to meet demand but levels are now below normal for this time of year. Hay and forage production was good. Range forage production was down.

Lake - Adequate irrigation water was available this year. Reservoir carry over is good.

EASTERN OREGON COUNTIES

Gilliam and Wheeler Counties - Streamflow was below average (80%) this year.

Morrow - Normal amounts of irrigation water have been available. However, in southern parts of the county below normal streamflows were experienced. Yields were down on dry cropland.

Umatilla - Water supplies were near normal where stored water was available. Most streamflows receded about one month early this year.

Summary Continued-

Grant - Irrigation water supplies were fair to good this past season. Supplies held up until mid-August on the mainstem then for approximately two (2) weeks water rights newer than 1910 were shut off. Some of the smaller tributaries were shut off for 1 month.

Harney - Southern Harney County had near normal irrigation water available. However, in northern parts of the county approximately 80% of the irrigation amounts were received. Runoff this year started and ended a month earlier than normal.

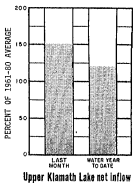
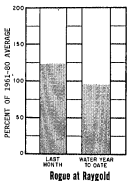
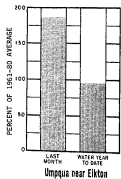
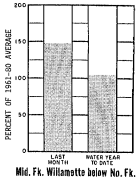
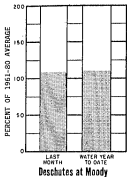
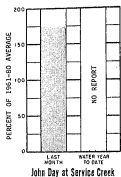
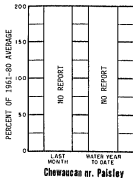
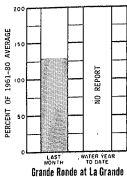
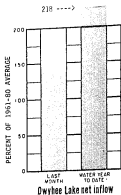
Malheur - All users of stored water had more than adequate supplies, while other users had normal amounts available. Spring and summer precipitation was below normal. However, due to high soil moisture levels, range forage was about average.

STATUS OF RESERVOIR STORAGE, OCTOBER 1, 1986

RESERVOIR	USABLE CAPACITY (1000's af)	THOUSANDS ACRE FEET IN STORAGE ABOUT OCT 1		
		20-YEAR AVERAGE		
		1986	1985	1961-1980
<u>UPPER COLUMBIA DRAINAGE</u>				
Beulah Reservoir	60.0	19.1	19.4	7.4
Bully Creek	30.0	9.2	7.1	7.5a
Owyhee	715.0	438.3	397.9	364.1
Phillips Lake	73.5	38.7	35.2	36.5a
Thief Valley	17.4	5.0	6.1	4.2
Unity	25.2	4.4	6.1	3.3
Wallowa Lake	37.5	9.0	18.6	15.0
Warm Springs	191.0	58.6	43.4	58.1
Wolf Creek	10.4	1.7	1.7	*
<u>LOWER COLUMBIA DRAINAGE</u>				
Blue River	85.5	9.4	12.8	15.5a
Clear Lake (Wasco)	11.9	5.7	6.5	2.6a
Cold Springs	50.0	N/R	3.9	3.2
Cottage Grove	29.8	12.5	9.1	7.8
Cougar	155.2	58.5	57.5	77.5a
Crane Prairie	55.3	25.8	32.0	20.5
Crescent Lake	86.9	55.2	63.9	35.6
Detroit	300.7	185.8	174.6	177.1
Dorena	70.5	29.9	26.1	20.1
Fall Creek	115.5	67.8	65.7	37.2a
Fern Ridge	109.6	71.3	73.2	66.3
Foster	29.7	23.7	25.1	23.6a
Green Peter	268.2	163.4	152.0	133.0a
Henry Hagg Lake	53.0	25.2	22.6	25.6a
Hills Creek	200.3	135.9	122.9	101.7a
Lookout Point	337.0	178.4	167.9	193.3
McKay	73.8	9.7	11.7	8.9
Ochoco	47.5	18.2	19.3	16.4a
Prineville	153.0	95.7	106.4	97.7a
Timothy Lake	61.7	53.1	57.5	60.3
Wickiup	200.0	79.5	79.5	53.2
Willow Creek	1.8	1.3	--	*
<u>WEST COAST DRAINAGE</u>				
Applegate	75.2	29.7	28.2	*
Clear Lake	513.3	323.1	301.3	179.2
Cottonwood	8.7	5.4	3.6	0.7a
Drews	63.0	34.3	25.2	24.7a
Emigrant Lake	39.0	4.8	7.6	8.8
Fish Lake	8.0	3.5	2.4	3.7
Fourmile Lake	16.1	8.6	8.0	5.9
Gerber	94.3	51.6	53.3	29.8
Howard Prairie	60.0	47.4	48.2	41.7
Hyatt Prairie	16.1	9.2	9.4	9.5
Lost Creek	315.0	158.0	162.6	*
Thompson Valley	18.4	N/R	9.5	8.7a
Upper Klamath Lake	523.7	291.2	307.9	307.4

N/R = No Report. a = 1961-80 Adjusted Average. * = Less Than 5 years' of Record.

CURRENT OREGON STREAMFLOW



Data furnished by U.S. Geological Survey; The Pacific Power and Light Co.; and North and South Boards of Control Owyhee Project.

The Following Organizations Cooperate With The Soil Conservation Service In Snow Survey Work

State

Oregon Department of Water Resources
Oregon State University
Soil and Water Conservation Districts of Oregon

Federal

U.S. Department of Agriculture
Extension Service
Forest Service
U.S. Department of Army
Corps of Engineers
U.S. Department of Commerce
NOAA, National Weather Service
U.S. Department of Energy
Bonneville Power Administration
U.S. Department of the Interior
Bureau of Land Management
Bureau of Reclamation
Fish and Wildlife Service
Geological Survey

Local

Arnold Irrigation District
Associated Ditch Companies
Burnt River Irrigation District
Central Oregon Irrigation District
City of Baker
City of La Grande
City of Portland
City of The Dalles
City of Walla Walla
Douglas County Water Resources Survey
East Fork Irrigation District
Grants Pass Irrigation District
Hood River Irrigation District
Jordan Valley Irrigation District
Juniper Flat Irrigation District
Lakeview Water Users, Incorporated
Medford Irrigation District
Middle Fork Irrigation District
North Board of Control - Owyhee Project
Ochoco Irrigation District
Rogue River Valley Irrigation District
South Board of Control - Owyhee Project
Squaw Creek Irrigation District
Talent Irrigation District
Tumalo Project
Vale - Oregon Irrigation District
Warmsprings Irrigation District

Private

Pacific Power and Light Company
Portland General Electric Company
The Crag Rats, Hood River, Oregon

Other organizations and individuals furnish information for the snow survey reports. Their cooperation is gratefully acknowledged.